

CLAIMS

What is claimed is:

1. An electrical cable having a local longitudinal axis and comprising:
a central conductor structure comprising
an electrically conducting central conductor,
a layer of a central conductor insulation overlying the central
conductor, and
an electrically conducting central conductor shield overlying the
layer of central conductor insulation;
a plurality of spiral conductor structures overlying and spirally wrapped
around the central conductor structure, each of the spiral conductor structures
comprising
an electrically conducting spiral conductor, and
a spiral conductor insulation overlying the spiral conductor,
each spiral conductor structure having no electrically conducting shielding
thereon;
an electrically conducting outer shield overlying the plurality of spiral
conductors; and
an outer insulation overlying the electrically conducting outer shield.

2. The electrical cable of claim 1, wherein the electrical cable is
substantially circular viewed in cross section perpendicular to the local
longitudinal axis.

3. The electrical cable of claim 1, wherein the central conductor
comprises a plurality of electrically conducting central conductor wires.

4. The electrical cable of claim 1, wherein the central conductor is a
coaxial wire structure.

5. The electrical cable of claim 1, wherein each spiral conductor comprises a plurality of electrically conducting spiral conductor wires. 25

20 as shown in Fig. 4

6. The electrical cable of claim 1, wherein the plurality of spiral conductor structures are each of substantially the same diameter. FIG 2

7. The electrical cable of claim 1, wherein at least some of the plurality of spiral conductor structures are of different diameters.

8. The electrical cable of claim 1, wherein each spiral conductor structure retains a same pair of circumferentially adjacent spiral conductor structures along a length of the electrical cable. FIG 2

9. The electrical cable of claim 1, wherein each spiral conductor structure has a designated identity, and wherein a circumferential arrangement of each spiral conductor structure is selected responsive to its designated identity and to the designated identities of each of a pair of circumferentially adjacent spiral conductor structures. COL 3, 49-53
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10. The electrical cable of claim 1, further including a spiral spacer structure spirally wrapped around the central conductor structure, the spiral spacer structure lying between two spiral conductor structures in a side-by-side relationship.

11. An electrical cable having a local longitudinal axis and comprising:
a central conductor structure comprising
an electrically conducting central conductor,
a layer of central conductor insulation overlying the central conductor, and
an electrically conducting central conductor shield overlying the layer of central conductor insulation;
a plurality of spiral conductor structures overlying and spirally wrapped

10 around the central conductor structure, each of the spiral conductor structures comprising

an electrically conducting spiral conductor, and
a spiral conductor insulation overlying the spiral conductor,

wherein

15 each spiral conductor structure has no electrically conducting shielding thereon, and wherein

each spiral conductor structure retains a same pair of circumferentially adjacent spiral conductor structures along a length of the electrical cable, wherein

20 each spiral conductor structure has a designated identity, and wherein

a circumferential arrangement of each spiral conductor structure is selected responsive to its designated identity and to the designated identities of each of the pair of circumferentially adjacent spiral conductor structures;

25 an electrically conducting outer shield overlying the plurality of spiral conductors; and

an outer insulation overlying the electrically conducting outer shield, wherein the electrical cable is substantially circular viewed in cross section perpendicular to the local longitudinal axis.

12. The electrical cable of claim 11, wherein the central conductor comprises a plurality of electrically conducting central conductor wires.

13. The electrical cable of claim 11, wherein each spiral conductor comprises a plurality of electrically conducting spiral conductor wires.

14. The electrical cable of claim 11, wherein the plurality of spiral conductor structures are each of substantially the same diameter.

15. The electrical cable of claim 11, wherein at least some of the

plurality of spiral conductor structures are of different diameters.

16. The electrical cable of claim 11, further including
a spiral spacer structure spirally wrapped around the central conductor
structure, the spiral spacer structure lying between two spiral conductor structures
in a side-by-side relationship.

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17. A method of preparing an electrical cable, comprising the steps of
providing a central conductor structure comprising
an electrically conducting central conductor,
a layer of central conductor insulation overlying the central
conductor, and
an electrically conducting central conductor shield overlying the
layer of central conductor insulation;

providing a plurality of spiral conductor structures each having a
designated identity and comprising
an electrically conducting spiral conductor, and
a spiral conductor insulation overlying the spiral conductor,
each spiral conductor structure having no electrically conducting shielding
thereon;

selecting a circumferential arrangement of each spiral conductor structure
responsive to its designated identity and to the designated identities of each of a
pair of circumferentially adjacent spiral conductor structures;

wrapping the spiral conductor structures around the central conductor
structure in a spiral pattern, each spiral conductor structure retaining the same pair
of circumferentially adjacent spiral conductor structures along a length of the
electrical cable;

placing an electrically conducting outer shield overlying the spiral
conductor structures that are wrapped onto the central conductor structure; and

placing an outer insulation overlying the outer shield to form the electrical
cable having a local longitudinal axis.

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18. The method of claim 17, wherein the plurality of spiral conductor structures are each of substantially the same diameter.

19. The method of claim 17, wherein at least some of the plurality of spiral conductor structures are of different diameters.

20. The method of claim 17, wherein the electrical cable is substantially circular viewed in cross section perpendicular to the local longitudinal axis.

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